

## Databases 2: Related Tables

### *Related tables*

The diagram below shows a database made up of two (unrelated) tables. This means that we cannot, for example, know what course was taken by a particular student.

Student

ID No.	Name	Address	DOB
5844	Borg Michael	5, St Peter Square	23/05/1997
4117	Galea Jackie	34, Valletta Road	04/07/1998
7502	Micallef Isabel	129, Dun Karm Valley	26/12/1997

Course

Course ID	Course Name
NW01	Networking
WD03	Web Design
PRJ01	Java Programming

In the diagram below however, the tables have been related to each other by means of the addition of a field called a **foreign field**. Now we know that Galea Jackie is following the Web Design course.

Student

ID No.	Name	Address	DOB	Course ID
5844	Borg Michael	5, St Peter Square	23/05/1997	NW01
4117	Galea Jackie	34, Valletta Road	04/07/1998	PRJ01
7502	Micallef Isabel	129, Dun Karm Valley	26/12/1997	NW01

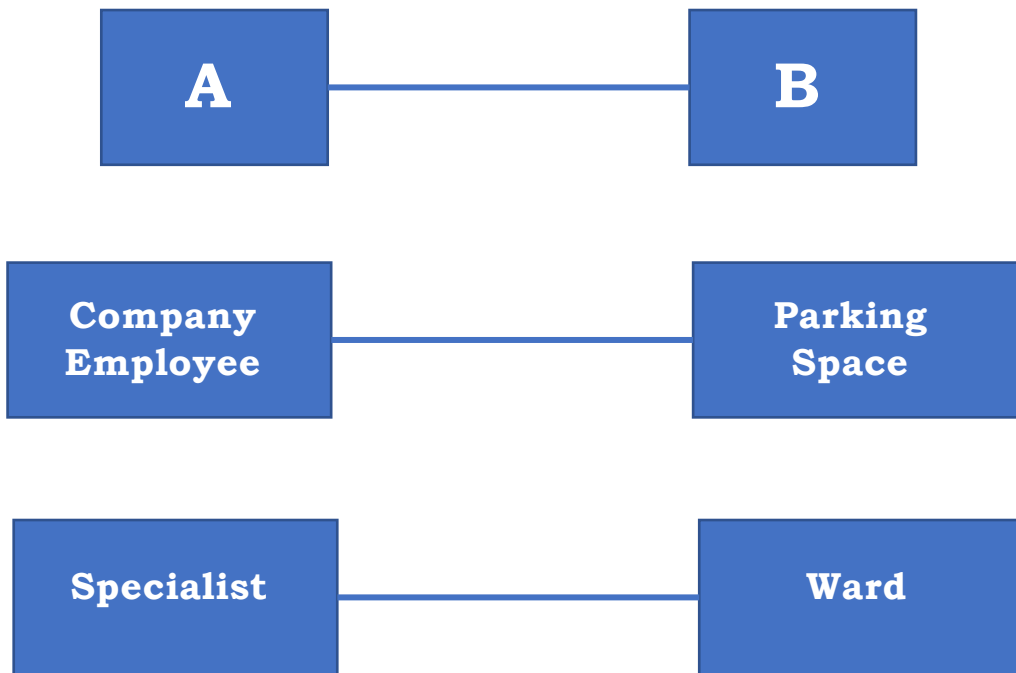
Course

Course ID	Course Name
NW01	Networking
WD03	Web Design
PRJ01	Java Programming

Tables can be related either as one-to-one or as one-to-many.

### *One-to-one*

This means that given two tables A and B each record in A can be associated with only one record in B and similarly each record in B can be associated with only one record in table A. The notation to show a **one-to-one** relationship is a line. Look at the diagram below:



### *One-to-many*

This means that given two tables A and B each record in A can be associated with any number of records in B while each record in B can be associated with only one record in table A. The notation for the **one-to many** relationship is known as a **Crow's Foot**.



Examples of one-to-many relationships are between Ward and Patient and between Car Owners and Cars.

### Notation to represent Relational Databases

One database shown above can be represented in the following way.

STUDENT ( <u>ID No.</u> , Name, Address, DOB, <i>Course ID</i> )
COURSE ( <u>Course ID</u> , Course Name)

Note that the primary field is underlined while the foreign field is written in italic.

### Types of Values

Different values are grouped in different sets called Types. The following are some types used:

NAME OF TYPE	SET OF VALUES
Integer	Whole numbers
Real	Numbers including fractional parts
Text	Names and sentences i.e. strings of characters
Date	Dates
Boolean	True or False
Memo	Text that can be very long. In Access a memo field can have up to 64K of text